

**REMARKS**

After entry of the foregoing amendment, claims 1 and 5-19 will be pending in the application. Applicant acknowledges the Examiner's remark that claims 3, 4, and 6, as originally submitted, "would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims" (Office Action at p.3, ¶ 2).

Claim 1, as amended herein, includes all of the limitations of claims 1, 2, and 3 as originally submitted, and claims 5-8 depend ultimately from claim 1. Applicant respectfully submits, therefore, that claims 1 and 5-8 are allowable. Similarly, newly submitted claim 9 includes all of the limitations of claims 1, 2, and 4 as originally submitted, and claims 10-13 depend ultimately from claim 9. Applicant respectfully submits, therefore, that claims 10-13 are allowable. Newly submitted claim 14 includes all of the limitations of claims 1, 5, and 6 as originally submitted, and claims 15-19 depend ultimately from claim 14. Applicant respectfully submits, therefore, that claims 14-19 are allowable.

**CONCLUSION**


For all the foregoing reasons, Applicants respectfully submit that claims 1 and 5-19 are in condition for allowance. In the event, however, that the Examiner believes that the application is not allowable for any reason, the Examiner is encouraged to contact the undersigned attorney to discuss resolution of any remaining issues.

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**- 7 -**

**PATENT**

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the claims:**

Please cancel claims 2, 3, and 4.

Please amend the claims as follows:

1. (Once Amended) A method for imaging blood flow, comprising the steps of:  
perturbing arterial spins of blood flowing into [the] a sample by applying a constant RF irradiation together with a magnetic field gradient;  
waiting a transit delay period before acquiring a first image of the sample;  
acquiring [a] the first image of the sample;  
applying amplitude modulated RF irradiation with a magnetic field gradient which, together, mimic the effects of constant RF radiation unrelated to blood flow;  
acquiring a second image of the sample; [and]  
generating a difference signal based on the first image and the second image that represents a blood flow image of blood flowing into the sample; and  
determining a duration of the transit delay period so as to permit blood having perturbed arterial spins to flow into a tissue, thus causing the blood flow image to be representative of perfusion.

9. (Newly added) A method for imaging blood flow, comprising the steps of:  
perturbing arterial spins of blood flowing into a sample by applying a constant RF irradiation together with a magnetic field gradient;

waiting a transit delay period before acquiring a first image of the sample;  
acquiring the first image of the sample;  
applying amplitude modulated RF irradiation with a magnetic field gradient which,  
together, mimic the effects of constant RF radiation unrelated to blood flow;  
acquiring a second image of the sample; and  
generating a difference signal based on the first image and the second image that  
represents a blood flow image of blood flowing into the sample; and  
determining a duration of the transit delay period so as to ensure that blood having  
perturbed arterial spins remains in a blood vessel of the sample, thus causing the blood flow  
image to be representative of large vessel blood flow.

10. (Newly added) The method of claim 9, wherein the step of acquiring the first image  
and the step of acquiring the second image each comprises detecting a magnetic resonance  
signal reflected off of the sample.

11. (Newly added) The method of claim 10, wherein the magnetic resonance signal is an  
analog signal, the method further comprising the steps of:

digitizing the magnetic resonance signal to form a digital magnetic resonance signal;  
and  
measuring the blood flow into the sample based on the digital magnetic resonance  
signal.

12. (Newly added) The method of claim 9, wherein the step of applying amplitude modulated RF irradiation comprises applying amplitude modulated RF irradiation having a modulation frequency in the range of about 62.5 Hz to about 500 Hz.

13. (Newly added) The method of claim 12, wherein the step of applying amplitude modulated RF irradiation comprises applying amplitude modulated RF irradiation having a modulation frequency of about 62.5 Hz.

14. (Newly added) A method for imaging blood flow, comprising the steps of:

perturbing arterial spins of blood flowing into a sample by applying a constant RF irradiation together with a magnetic field gradient;

acquiring a first image of the sample;

applying amplitude modulated RF irradiation with a magnetic field gradient which, together, mimic the effects of constant RF radiation unrelated to blood flow;

acquiring a second image of the sample, wherein the step of acquiring the first image and the step of acquiring the second image each comprises detecting an analog magnetic resonance signal reflected off of the sample;

generating a difference signal based on the first image and the second image that represents a blood flow image of blood flowing into the sample;

digitizing the magnetic resonance signal to form a digital magnetic resonance signal;

and

measuring the blood flow into the sample based on the digital magnetic resonance signal.

15. (Newly added) The method of claim 14, comprising the further step of waiting a transit delay period before acquiring the first image of the sample.

16. (Newly added) The method of claim 15, comprising the further step of determining a duration of the transit delay period so as to permit the blood having perturbed arterial spins to flow into a tissue, thus causing the blood flow image to be representative of perfusion.

17. (Newly added) The method of claim 15, comprising the further step of determining a duration of the transit delay period so as to ensure that blood having perturbed arterial spins remains in a blood vessel of the sample, thus causing the blood flow image to be representative of large vessel blood flow.

18. (Newly added) The method of claim 14, wherein the step of applying amplitude modulated RF irradiation comprises applying amplitude modulated RF irradiation having a modulation frequency in the range of about 62.5 Hz to about 500 Hz.

19. (Newly added) The method of claim 18, wherein the step of applying amplitude modulated RF irradiation comprises applying amplitude modulated RF irradiation having a modulation frequency of about 62.5 Hz.